Journal of Epidemiology and Community Health, 1984, **38**, 156–160

Perceived health: age and sex comparisons in a community

SONJA M HUNT, J MCEWEN, AND S P MCKENNA

From the Academic Department of Community Medicine, King's College Hospital Medical School, London SE5 8RX, UK

SUMMARY The need to find accurate and reliable indicators on which to base the planning, provision, and evaluation of health services gave impetus to the attempt to develop reliable and valid measures of the perceived health status of the consumers of health care. Subjective measures can provide an important complement to traditional statistics by giving direct access to the personal feelings of discomfort or distress that influence the use of health services. Such measures also give meaningful criteria for the evaluation of the efficacy of such services. Self assessments of health obtained from surveys and interviews have consistently found age and sex differences in the tendency to report symptoms, ill-health, disability, visits to doctors, and sickness absence. Many of these data, however, may have been misleading in using instruments of unknown or uncertain validity and reliability. Nevertheless, subjective assessments of health have been shown to have value and to add a dimension to objective measurements of health. They have been considered to be one of the better predictors of mortality and of adjustment to major episodes of illness.

The Nottingham Health Profile[1-2] is a short two part questionnaire the first part of which measures discomfort or distress in six areas: pain, physical mobility, sleep, energy, emotional reactions, and social isolation. The second part looks at areas of daily life affected by such problems as job of work, looking after the house, social, home, and sex life, hobbies, and holidays. Scores on part 1 are weighted such that the higher the score in any area the greater the number and severity of problems.

This paper reports the results from a community survey showing the effects of age and sex on perceived health.

Effects of age on health

Increasing age brings increasing risk of chronic conditions, both major and minor. Illness and disability will obviously have an impact on perceived health but the relation is by no means clear cut. Some studies have found that the elderly in particular are likely to perceive their health as good even in the presence of overt pathology.[4 5] Although many studies of the health of the elderly are available, rather less is known about that of middle age and younger groups, although writers on the "mid-life crisis" have indicated a rise at this time in emotional and social distress.[6] It is by no means clear whether there is a linear relation between age and subjective health or whether the relation varies at different times of life or according to the area being measured—for example, emotional distress may decrease as problems of energy loss increase.

Effects of sex on health

In most countries women outlive men; in Western countries there has been an increase in excess male mortality[7] and men have an excess of more serious episodes of illness and make more successful suicide attempts. Men also appear to engage in more "risky" behaviours—smoking, drinking alcohol, and driving are more common in men than women—whereas women are more likely to engage in "preventive" behaviours such as going for screening and immunisation, although they do take more prescribed drugs. Nevertheless, women report more symptoms of both mental and physical illness and utilise services more than men. These rates may be inflated by differences in illness behaviour, physician expections, and men's reluctance to report emotional problems.[7-10]

Several studies have tried to relate sex differences in perceived health to differential employment and status. Results of such studies have been contradictory. Employment status has been found to

be important in reducing reports of morbidity,[11] but it has been shown that regardless of employment, women report many more symptoms than men[12] and Newberry *et al* found that working wives and housewives did not differ on past or current psychiatric symptoms.[13] On the other hand, several studies have reported consistently higher rates of perceived illness among housewives as compared with working women.[14–16] A more recent study found no differences on health status indices between employed men and employed women but that both differed significantly from housewives, the housewives having the poorest health status.[17]

Undoubtedly, many of these anomalies can be accounted for by differing samples, the different indices used, and cultural and subcultural differences in values and illness behaviour. Nathanson surveyed 45–64 year olds in the United States using reports of visits to doctors, restrictions of activity, and comparisons of own health with others of the same age.[17] Marcus and Seeman, however, again in the United States, used a wider age range and asked about episodes of acute and chronic illness and disability days.[11] There is an apparent need for a standard measure which can be used for comparison purposes.

Study method

A random sample of men and women divided into five year age groups from 20 to 75 and over was drawn from the age-sex register of a medical group practice near Nottingham.

A copy of the Nottingham Health Profile and an extra section asking for demographic data, together with a covering letter signed by the members of the practice and a prepaid return envelope, was posted to each person in the sample on the same day.

Of 3200 questionnaires sent out, 2192 were returned after 10 weeks; of these, 2173 were usable, giving a response rate of 68%.

The lowest response rate was from men aged 20–24 (57%) and the highest from women aged 25–29 (79%).

The sex distribution of respondents was almost identical to that in the census for the area. Age groups 20–29, 40–45, and 69 and over were somewhat over represented, and the others under represented as compared with the census.

Study results

Tables 1 and 2 show the distribution of scores on each section of parts I and II respectively for 12 sex and age groups.

Sex differences in all age groups were statistically significant beyond the 1% level (using a Kruskal-Wallis test) on every section of part I. On part II, Kruskal-Wallis tests indicated significant differences for jobs around the house, social life, and personal relations ($p<0{\cdot}05$ in each case).

Age differences were statistically significant (using Kruskal-Wallis) beyond the 1% level on every section of part I and on part II for jobs around the house, sex life, and holidays.

Table 3 shows the scores of working men, working women, and housewives. Kruskal-Wallis tests showed that employed women scored significantly higher than employed men on every section of part I except social isolation ($p<0.05$). On part II of the profile, the two groups differed only on health affecting jobs around the house ($p<0.05$). Employed women and housewives differed significantly only on scores for pain and physical mobility, with housewives reporting more problems.

Further analysis showed sex differences to hold regardless of socioeconomic status, although because of insufficient numbers in some cells it was not possible to relate this to employment status.

Differences in perceived health status related to age and sex are by no means straightforward. Although as a group women score higher than men, this finding is more pronounced at some ages than others and related more to type of problem being reported. For example, sex differences on pain scores are not significantly different until after age 55 when women manifest a sharp increase. Sex differences are not apparent in physical mobility until after 45 when women begin to report more problems than men. There is a large increase in physical mobility problems for both sexes after age 60. Both sexes score low on social isolation until after age 65 when the female score becomes significantly higher.

At all ages women score significantly higher on energy than men with the exception of the group aged 50–54. Women report significantly more problems on emotional reactions than men except at ages 40–44 and 50–54. The large increase in score for women at 30–39 drops again at 40–44 but shows an increase after 65. The scores, however, are not very different from those of the 20–24 year olds.

Women have significantly higher scores on the sleep section than men at all ages, but scores for both sexes show a parallel trend rising after age 35 and becoming very high after 60.

On part II, work is apparently not differentially affected by health until age 50 when the affirmative responses of men increase. More women report that looking after the home is affected by health problems at all ages except 60–64, but there is a big increase for both sexes in the older age groups, starting at 65 for women and 70 for men. Sex differences relating to personal relations at home (home life) are most

Table 1 *Mean scores on part I of the Nottingham Health Profile by sex and age group*

	Sex	20–24	25–29	30–34	35–39	40–44	45–49	50–54	55–59	60–64	65–69	70–74	≥75
Energy	M	10·1	8·6	4·0	5·0	10·1	8·0	11·6	13·3	15·5	13·8	20·0	29·3
	F	16·6	20·0	14·7	14·1	12·6	17·0	11·8	18·6	18·7	23·6	34·3	44·0
Pain	M	0·7	1·6	2·8	2·6	5·8	3·0	7·1	2·9	8·3	8·8	7·3	14·1
	F	1·1	2·8	3·0	1·5	5·9	7·0	6·0	14·5	10·0	20·9	16·4	25·9
Emotional reactions	M	11·6	10·3	6·3	10·3	10·4	7·7	10·6	7·7	9·9	5·3	8·7	12·8
	F	14·3	14·7	11·2	17·9	10·0	13·1	9·3	11·2	10·0	12·5	14·5	16·6
Sleep	M	8·4	8·6	6·2	5·7	11·9	8·4	13·4	11·7	19·8	19·9	16·8	20·6
	F	12·1	9·7	13·1	11·8	13·0	15·2	16·7	20·3	20·1	38·5	30·4	39·9
Social isolation	M	5·5	5·6	2·9	2·7	5·0	1·6	5·5	3·4	7·4	2·7	4·2	9·8
	F	7·1	6·9	4·3	7·4	3·5	5·3	5·3	5·3	6·0	5·9	10·7	12·1
Physical mobility	M	1·5	1·6	1·3	1·2	3·2	1·1	4·1	3·7	7·5	7·3	9·6	21·3
	F	1·4	2·0	1·9	1·0	3·3	4·1	4·8	7·4	8·6	18·0	16·9	36·1

Table 2 *Percentage of populations affirming problems in each area on part II of the Nottingham Health Profile by sex and age group*

	Sex	20–24	25–29	30–34	35–39	40–44	45–49	50–54	55–59	60–64	65–69	70–74	≥75
		%	%	%	%	%	%	%	%	%	%	%	%
Work	M	3·5	7·0	4·3	12·7	13·7	5·3	26·5	13·8	19·1	1·4	4·0	0·0
	F	5·9	6·3	3·5	13·4	9·1	5·2	9·6	8·4	4·2	8·2	1·5	0·0
Looking after the home	M	4·4	6·2	0·0	3·2	9·7	7·1	11·7	12·3	13·2	10·9	24·3	30·5
	F	12·6	13·2	9·4	17·9	14·1	11·2	13·7	16·9	12·7	28·8	33·0	40·8
Social life	M	5·3	8·6	2·9	6·3	9·7	1·8	14·7	6·1	10·3	10·1	21·6	26·7
	F	10·1	11·3	4·7	10·4	8·4	5·9	10·9	9·8	9·8	20·5	26·1	33·8
Home life	M	7·8	8·6	2·9	4·8	9·7	8·0	13·2	6·1	0·0	2·9	9·4	9·7
	F	10·1	16·3	12·9	22·4	12·0	11·1	5·5	2·8	4·2	6·8	10·8	11·3
Sex life	M	6·1	6·2	2·9	3·2	13·7	9·8	20·6	18·5	10·3	14·5	18·9	18·0
	F	11·8	23·2	11·8	23·9	14·1	15·5	12·3	21·7	7·0	15·1	12·7	7·0
Interests & hobbies	M	7·0	14·1	2·9	4·8	14·5	11·6	14·7	10·8	20·6	11·6	24·3	26·7
	F	7·6	10·1	5·9	14·9	6·3	10·4	10·9	7·0	11·3	19·2	22·2	22·5
Holidays	M	6·1	6·2	1·4	3·2	8·1	5·3	13·2	4·6	11·8	13·0	21·6	36·1
	F	5·9	5·0	3·5	5·9	5·6	7·4	9·6	11·3	12·7	19·2	26·1	31·0

Table 3 *Mean scores on part I and percentages affirming areas of life affected by health problems (part II) of the Nottingham Health Profile for working men, working women, and housewives*

	Working men	Working women	Housewives
	(n = 488)	(n = 186)	(n = 171)
Energy	7·2	16·3	16·8
Pain	2·8	3·9	7·0
Emotional reactions	7·9	13·1	11·1
Sleep	8·7	14·7	15·9
Social isolation	3·1	5·4	4·9
Physical mobility	1·7	1·9	5·2
	%	%	%
Work	9·0	10·2	3·5
Looking after the home	6·1	11·3	15·8
Social life	5·1	8·1	12·3
Home life	6·1	9·7	10·5
Sex life	8·8	13·4	14·6
Interests & hobbies	10·2	9·7	11·6
Hoidays	4·7	6·4	8·8

pronounced between ages 25 and 39, when women are significantly more likely than men to feel this effect as a result of health problems. There were no significant sex differences on social life, but effects on sex life were more likely to be reported by women aged 20–39. No significant sex or age difference were apparant on hobbies or holidays.

Discussion

Explanations of sex differences in perceived health can be viewed from different perspectives: firstly, that they reflect actual differences in health status which are a consequence of biological and social factors; secondly that they reflect a difference in the tendency to report health problems and distress; and thirdly that they reflect a greater awareness in the socioemotional sphere. Examination of the pattern

of scores on part I of the profile shows that sex differences are not consistent, but are more pronounced in some age groups than in others. For example, sex differences in score diminish considerably and in some cases reverse themselves between ages 40 and 54, largely as a consequence of increases in men's scores. This would tend to support the view that it is actual differences in health status that account for differential scoring. For example, women in middle life may experience some easing of the pressures of home and family, while men, conversely, may be particularly vulnerable to financial, social, and occupational stress at this time.

Scores on the pain and physical mobility sections clearly increase with age in both sexes as would be expected, but the scores of women differ little from those of men until after the age of 45 when female scores show a comparative increase. This pattern may be accounted for by the tendency of women to suffer genitourinary and gynaecological complaints and because women are more likely to survive into old age with a variety of chronic conditions. Because of the earlier mortality of men in general, their lower scores may be an indication of the "survival of the fittest."

Female scores exceed male scores at most ages on sleep, energy, and emotional reactions. It has been suggested that women have more extensive "role obligations" than men, since, whether they are employed or not, their duties tend to include more elements of caretaking and nurturing than do those of men. Some concomitants of these obligations that might impinge on health status, both perceived and actual, could be a tendency to "keep going" in the face of illness, excess fatigue, and a greater likelihood of being exposed to infection.

In both sexes feelings of social isolation were quite low at all ages until after 65 when the female score increased. This may well be because women are more likely than men to have lost their spouse and to be living alone.

Scores on the profile indicate that working men express fewer problems than both housewives and employed women, and that housewives and working women differ significantly only on pain and physical mobility scores. This finding may explain whether the common finding that women who do not work express a poorer health status than women who do is due to the frustrations of being house bound or reflects a greater tendency of those who feel fitter to go out to work. The fact that the problems of housewives tend to lie in the more tangible areas of pain and physical mobility seems to indicate that non-working women may be less physically well than women who do work. Nevertheless, causality can not be determined. Employment may well reduce pain and physical mobility problems suffered by women who are employed.

Scores on part II clearly reflect differences in the social and occupational obligations of men and women. As the number of women employed declines after age 45, the effects on job of work decline, as they do for both sexes after age 65. Sex differences in effects on looking after the home are pronounced at almost all ages.

Health effects on personal relations tend to be more frequent in women only in younger age groups and may reflect their greater involvement in family life. This may also be linked to their greater tendency to report effects on sex life. It may also reflect the nature of the health problem—that is, the susceptibility to gynaecological and obstetrical problems, or to the reluctance of men to report effects that might reflect on their virility.

In general, perceived health declines with age, and the effects of ill health begin to impinge on more areas of daily activity. Although pain, physical mobility, energy, and sleep scores all show an increase, scores on social isolation and emotional reactions are relatively low suggesting adaptation to experienced physical problems with age.

The use of the Nottingham Health Profile for examining demographic aspects of perceived health has distinct advantages. Since the items refer to problems and not symptoms, as do most self assessment instruments, there is less opportunity for respondents to "medicalise" psychological or social stresses. It also overcomes the difficulty that the elderly tend to see their "health" as good regardless of objective condition by focusing not on health itself but on experienced distress and discomfort.

Although further studies will be required to confirm and extend the findings of this study the profile seems to constitute an acceptable and simple way of surveying perceived health status in general populations and in illuminating aspects of age and sex difference.

This research was supported by the Social Science Research Council (Grant No HR 6157/1). The cooperation of general practitioners in the Nottingham/Derby area and their staff is gratefully acknowledged.

References

[1]Hunt M, McEwen J. The development of a subjective health indicator. *Sociology of Health and Illness* 1980; **2:** 231–46.

[2]Backett EM, McEwen J, Hunt SM. Report to the Social Science Research Council. *Health and Quality of Life* 1981.

[3]McKenna SP, Hunt SM. Weighting the seriousness of perceived health problems using Thurstone's method of paired comparisons. *Int J Epidemiol* 1981; **10:** 93–7.

[4] Maddox GL, Douglas EB. Ageing and individual differences: a longitudinal analysis of social psychological and physiological indicators. *Gerontology* 1974; **29:** 555–63.
[5] Williamson J, Stokoe I, Gray J, *et al.* Old people at home and their unreported needs. *Lancet* 1964; i: 1117–20.
[6] Levinson DJ. The mid-life transition: a period in adult psychological development. *Psychiatry* 1977; **40:** 99–122.
[7] Rutherford RD. *The changing sex differential in mortality Westport* Connecticutt: Greenwood Press, 1975.
[8] Vergrugge L. Sex differences in morbidity and mortality in the United States. *Soc Biol* 1976; **23:** 275–96.
[9] Nathanson C. Sex, illness and medical care: a review of data, theory and method. *Soc Sci Med* 1977; **11:** 13–25.
[10] Mechanic D. Sex, illness, illness behaviour and the use of health services. *J Hum Stress* 1976; **2:** 29–40.
[11] Marcus AC, Seeman TE. Sex differences in reports of illness and disability: a preliminary test of the "fixed role obligations" hypothesis. *J Health Soc Behav* 1981; **22:** 174–82.
[12] Haynes SG, Feinleib M. Women, work and coronary heart disease: prospective findings from the Framingham heart study. *Am J Pub Health* 1980; **70:** 133–41.
[13] Newbury P, Weissman MM, Myers JK. Working wives and housewives: do they differ in mental status and social adjustment? *Am J Orthopsychiat* 1979; **49:** 282–91.
[14] Baetjer AM. *Women in industry: their health and efficiency.* Philadelphia: W B Saunders, 1946.
[15] Welch S, Booth A. Employment and health among married women. *Sex Roles* 1977: **3:** 385–8.
[16] Gove W, Hughes M. Possible causes of the apparent sex differences in physical health: an empirical investigation. *Am Sociol Rev* 1979; **44:** 126–46.
[17] Nathanson C. Social roles and health status among women: the significance of employment. *Soc Sci Med* 1980; **14A:** 463–71.